**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**1. Definitions. Write a short definition for each of the following terms:**

**Buoyant Force-** The upward force by a fluid on an object

**Gravitational Force-** The downward force that pulls objects towards the center of the earth.

**Viscosity -** The thickness or thinness of a liquid; how fast a fluid can flow.

**Density –** The measure of how compact an object is; how much matter is in a certain volume.

**Phase Change –** The process that occurs between states of matter.

**2. Write the formula for density: Density = Mass/Volume**

**3. Fill in the properties on the following table.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Property** | **Solid** | **Liquid** | **Gas** |
| **Movement** | Vibrate in place | Free Flowing | Random movement |
| **Distance of particle** | Very close together | Close together | Very far apart |
| **Shape** | Definite shape | Indefinite Shape | Indefinite shape |
| **Volume** | Definite Shape | Definite Volume | indefinite volume |

**4. Think of 4 liquids and rank them from highest viscosity to lowest viscosity.**

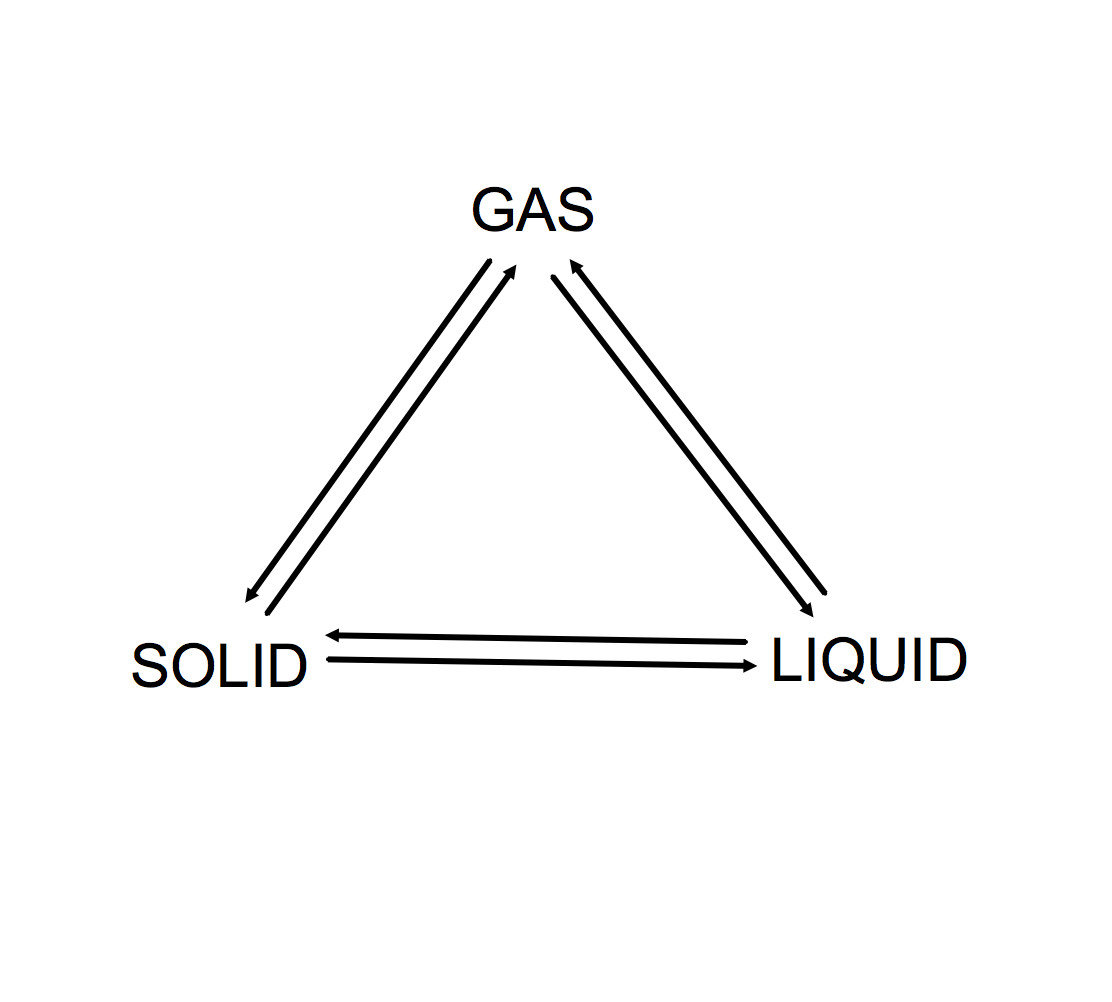
**Corn syrup\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Highest**

**Molasses\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Oil \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Water\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Lowest**

**5. On a sheet of loose leaf, draw a buoyancy diagram for an object that is neutrally buoyant, negatively buoyant, and positively buoyant.**



**6. Label the phase changes on the phase change triangle.**

**7. What is the relationship between temperature and density? Explain using the particle theory of matter.**

**As particles heat up they expand, take up more volume, and decrease the density. As particles cool down, take up less space, and increase the density.**